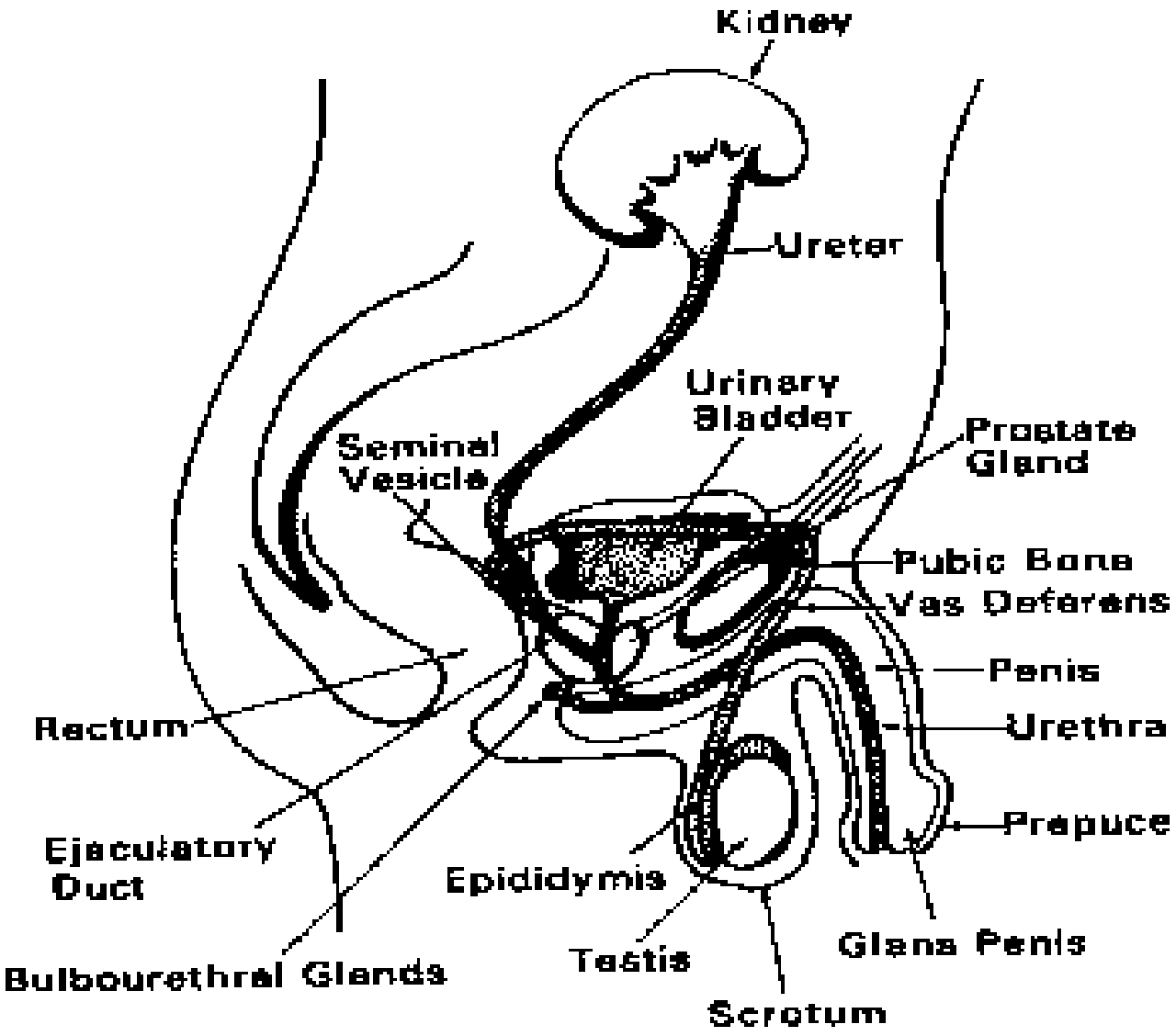
The Role of the Operating Room Specialist in Genitourinary Surgery

The Genitourinary System

- GU surgery involves the male and female urinary systems and the reproductive system of the male.
- The urinary system removes waste products from the blood and excretes them from the body.
- The location and function of the male reproductive organs are closely related to the urinary tract organs.

Male Genitourinary System



Genitourinary Instruments

- Instrumentation is very similar to that of general surgery.
  - Rib resection instruments.
    - Bethune rib cutters are used to cut a rib for access to the kidneys.
    - Alexander periosteal elevator are used to remove periosteum from the rib.
    - Doyen rib stripper is also used to remove periosteum from the rib.

GU Instruments cont.

- Retracting instruments.
  - Finochietto rib retractor is used to maintain access to the kidneys.
  - Millin retropubic bladder retractor is used during retropubic prostatectomies.
  - Dennis-Brown ring retractor is used during perineal prostatectomies.
  - Other manual retractors such as Richardsons and malleables.

Instruments cont.

- Urethral dilating and stone grasping forceps.
  - Van Buren urethral sounds are used to release urethral strictures.
  - Randall kidney stone forceps (5 different curves).

Instruments cont.

- **Endoscopic GU instruments and components.**
  - **Cystoscope and components helps the surgeon to make a diagnosis and perform surgery.**
    - **Telescope- The optical system of the cystoscope (5 different angles of view).**
    - **Sheath- Hollow tube or sleeve that serves as a passageway for instruments.**

Instruments cont.

- **Obturator- Metal rod inserted into the sheath before inserting the sheath into the urethra.**
- **Fiberoptic cable- Cable connecting the cystoscope to the light source.**

Instruments cont.

- Resectoscopes and components use electrical current to cut tissue from the bladder, urethra or prostate.
  - Working elements are a thumb or finger control for movement of the cutting loop.
  - Cutting loops are electrodes from which electricity is passed to cut and cauterize.

Genitourinary equipment

- **The GU table.**
  - **The GU table is designed to maintain the patient in the lithotomy position, it may be equipped with:**
    - **X-ray unit for conventional x-rays or tomography.**
    - **Drainage system for the collection of sterile specimen.**
    - **Knee supports for patient comfort during long procedures.**

Equipment cont.

- **Irrigating equipment.**
  - **Continuous irrigation of the bladder is required during cystoscopies to:**
    - **Distend bladder walls for better visualization.**
    - **Wash out blood, resected tissue or stone fragments.**
  - **Special fluid admin sets allow multiple containers to be hung.**

Equipment cont.

- Irrigation containers should be hung 2 1/2 feet to 3 feet above the bed.
- Solutions are a combination of sorbitol-manitol and 1.5% glycine (does not conduct electricity).
- Normal saline WILL NOT be used because its minerals will conduct electricity.

Equipment cont.

- Evacuating equipment.
  - Evacuators can be connected to the scope to irrigate or to suction fragments from the bladder.
    - Ellik evacuator is a bowl shaped glass evacuator with a rubber bulb.
    - Toomey evacuator is a syringe type evacuator.
  - Stone or tissue collected in the evacuators are handled as specimen.

Genitourinary Catheters

- **Urethral catheters are divided into two categories, non- retaining and self-retaining.**
  - **Non-retaining Catheters (no balloon).**
    - **Robinson catheter- Plain straight catheter used to empty the bladder.**
    - **Coude catheter- Angle tip catheter used to curve around an obstruction.**

GU Catheters cont.

- **Multieyed catheters- Straight catheters with multiple eyes to permit drainage of clots or debris.**
- **Phillips catheter- Straight catheter with a screw tip used to locate a passage through the urethra in the case of strictures.**

GU Catheters cont.

- **Self retaining catheters (has a balloon or flared tip).**
  - **Foley catheters- Straight catheters with an inflatable balloon for retention.**
  - **Pezzer or Malecot- Straight catheters used to drain the bladder suprapubically, Pezzer has a mushroom shaped tip and Malecot has a wing shaped tip.**

GU Catheters cont.

- **Characteristics and uses of ureteral catheters.**
  - **Ureteral catheters are used to get a specimen from or to inject dye into the renal pelvis for x-ray studies.**
  - **Ureteral catheters are made of woven silk, woven nylon or plastic material.**
  - **Ureteral catheters are radiopaque.**
  - **Ureteral catheters are are smaller in diameter but longer than urethral catheters.**

Trans Urethral Resection of the Prostate

- Piece by piece resection of the prostate by means of a resectoscope.
- Done to treat obstructive enlargement of the prostate.
- Significant surgical anatomy.
  - Urethra.
  - Prostate.
  - Bladder.

TURP cont.

- **Potential surgical hazards.**
  - **Embolus.**
  - **Epididymoorchitis.**
  - **Bladder perforation.**
- **Operative procedure.**
  - **the patient is placed in the lithotomy position and then prepped and draped.**

TURP cont.

- The urethra is dilated.
- Cystourethroscopy is performed to check the degree of the obstruction.
- Lubricated resectoscope instruments are passed into the urethra.
- Tubing, light cord, electrosurgical cord are connected, and the bladder is filled.

TURP cont.

- Electrodissection is carried out.
- The bladder is drained at intervals with the Ellik evacuator.
- After resection the fossa is inspected and all bleeding points are coagulated.
- The resectoscope is removed and a Foley catheter is inserted into the bladder for drainage and hemostasis.

Nephrectomy

- Surgical removal of a kidney.
- Rationale:
  - Congenital abnormalities.
  - Renal tumors.
  - Infection with stones .
  - Pyelonephrosis.
  - Renal trauma.

Nephrectomy cont.

- Significant surgical anatomy.
  - Kidneys.
  - Eleventh and twelfth ribs.
  - Ureters.
  - Renal artery and vein.
- Potential surgical hazards- Hemorrhaging.

Nephrectomy

- **Operative procedure.**
  - **Patient is placed in the lateral position and then prepped and draped.**
  - **A curved flank incision is made through the layers.**
  - **The eleventh or twelfth rib may be removed.**
  - **A self-retaining retractor is placed in the wound.**

Nephrectomy cont.

- Ureters and major vessels are ligated and severed, and the kidney is removed.
- All bleeding points are coagulated and the wound is closed.

Cystoscopy

- Endoscopic exam of the lower urinary tract using a cystoscope.
- Rationale.
  - Hematuria (blood in urine).
  - Urinary retention.
  - Urinary tract infections.
  - Urinary incontinence.

Cystoscopy cont.

- **Significant surgical anatomy.**
  - **Urethra.**
  - **Bladder.**
- **Potential surgical hazards- Bladder perforation.**
- **Operative procedure.**
  - **Position is the modified lithotomy, general or spinal anesthesia is administered prior to the prep.**

Cystoscopy cont.

- The cystoscope is assembled, and inserted into the urethra.
- The bladder is distended and the surgeon conducts the examination.

Duties of the O.R. Specialist in a Cystoscopy

- **Before.**
  - **The O.R. specialist puts on sterile gloves and sets up the instrument table and other sterile supplies.**
  - **Assists in positioning the patient on the O.R. table.**

Duties cont.

- During.
  - The O.R. specialist will remain in the room throughout the procedure.
  - Connects the nonsterile ends of all tubing and cords.
  - Retrieves and opens sterile supplies as needed.
  - Receives any specimen and ensures proper labeling.

Duties cont.

- After.
  - The O.R. specialist will assist in transferring the patient to the transport stretcher.
  - Handles and transports all specimen IAW with hospital SOPs.
  - Returns nonsterile supplies used.
  - Performs decon or terminal sterilization of soiled equipment.

Hydrocelectomy

- Surgical removal of a fluid filled sac located around the testicles.
- Rationale- To avoid damage to the testicles.
- Significant surgical anatomy:
  - Scrotum.
  - Testicles.
  - Tunica vaginalis.
  - Epididymis and spermatic cord.

Hydrocelectomy cont.

- **Operative procedure.**
  - **Position is supine and anesthesia is general.**
  - **Anterolateral incision is made over the mass.**
  - **Vessels are ligated and fascial layers are incised to expose the tunica.**
  - **The hydrocele is dissected free and the fluid aspirated.**

Hydrocelectomy cont.

- Excess tunica is excised and the edges are sutured. The testis are returned to the sac.
- A penrose drain is placed in the scrotum.
- A fluff compression dressing in a scrotal support is placed on the patient.

Commonly Performed Procedures

- **Vasectomy- Excision of a segment of the vas deferens.**
- **Rationale:**
  - **Permanent sterilization.**
  - **Sometimes performed before prostatectomies to prevent post operative epididymitis.**

Procedures cont.

- **Pyelolithotomy- Surgical removal of calculi from the renal pelvis.**
- **Rationale- Stones can block the flow of urine.**

Procedures cont.

- **Nephrostomy- Placement of a drain in the renal pelvis .**
- **Rationale- Drain is inserted when a ureter is blocked due to injury or infection.**

Procedures cont.

- **Hypospdias repair- Surgical correction of a urethral meatus.**
- **Rationale:**
  - **Abnormal curvature of the penis.**
  - **Disruption of normal urination and fertilization of the female.**
  - **Reconstruction of the urethra.**